

## PORTABLE CELLULAR TELEPHONE AND COMMUNICATION SYSTEM THEREOF

### DESCRIPTION

The present invention relates to a portable cellular telephone and relevant communication system with telematic services supplied by telecommunications stations and/or networks.

In recent times, telecommunications networks have experienced an extremely fast development spreading to every society level and making available to subscribers a large number of remote access services through special terminals.

Said telematic services range from Internet connectivity to interactions with other  
5 network types, which may be identified by a wide geographical coverage, such as a cellular telephone network, or have a local diffusion, such as a company network, or just be simple stations for supplying said services, such as a computer. Also the services having access through special smartcards connected with the terminals are included in this range of telematic services.

10 Therefore, subscribers need to use a plurality of terminals to provide interaction with said telematic services, involving consequent encumbrance and managing problems.

In addition, some of these terminals, in particular those using radio transmissions, such as cellular telephones, expose the subscriber's body to very close radio emissions. Therefore, it is obvious how such exposures are dangerous for the subscriber and how,  
15 increasing the number of terminals determining such harmful radio emissions in contact with the subscriber, would be extremely harmful.

It is the object of the present invention to solve the above drawbacks and provide a portable cellular telephone and relevant communication system with telematic services supplied by telecommunications stations and/or networks, having a more efficient and  
20 improved performance with respect to existing solutions.

In this frame, it is the main object of the present invention to provide a portable cellular telephone and relevant communication system with telematic services supplied by telecommunications stations and/or networks allowing concentration of the terminals required for subscriber's interaction with the telematic services in one terminal alone,  
25 which is not harmful for the subscriber.

In order to achieve such aims, it is the object of the present invention to provide a portable cellular telephone and relevant communication system with telematic services supplied by telecommunications stations and/or networks, incorporating the features of the annexed claims, which form an integral part of the description herein.

5 Further objects, features and advantages of the present invention will become apparent from the following detailed description and annexed drawings, which are supplied by way of non limiting example, wherein:

- Fig. 1 shows an exploded prospective view of a portable cellular telephone according to the present invention;
- 10 - Fig. 2 shows a side view of the telephone of Fig. 1;
- Fig. 3 shows a block diagram of the parts forming the telephone of Fig. 1;
- Fig. 4 shows a possible flow diagram of the portable cellular telephone according to the present invention;
- Fig. 5 shows a communication system with telematic services supplied by  
15 telecommunications stations and/or networks according to the present invention.

The inventive idea lies in the use of a cellular telephone as a communication terminal with further telecommunications networks or stations associated to telematic services, which cellular telephone is apt to perform usual common terminal functions towards the cellular telephony network. According to the present invention, this cellular telephone  
20 can be separated in two sections, a first part concentrating the subscriber interface functions, said first section also comprising transceiving means towards further telecommunications networks or stations associated to distribution of telematic services, whereas the second part of the cellular telephone concentrates the power functions associated to the cellular telephone network, which are potentially harmful for the  
25 subscriber.

So, Figure 1 is representing a portable apparatus for cellular telephone, indicated in general with 10, which consists of a first part 11, comprising the telephone audio section, with earphone 12 and microphone 13, a keyboard 14 and an LCD display 15, i.e. the functions of subscriber interface functions, and a second part 16 containing the  
30 entire power radio section for reception and transmission from and to the cellular network. To this purpose, the second part comprises an appropriate antenna 17 and a GSM dual-band DCS transceiver. For simplicity's sake, reference will be made to GSM

system; however, any other standard already applied nowadays or to be applied in the future (such as UMTS standard) can be used. The antenna may be either "stubby" or "patch" type.

The first and second parts can be assembled together and separated from each other by means of clips indicated by way of example with 18. When separated, the first and second parts are in communication with each other by means of a wireless bi-directional connection.

This connection can be advantageously obtained by a low power radio link, such as at 2.4 GHz frequency with internal antennas, for example provided directly in the printed circuits of the apparatus. Connection can be obtained with any desired protocol, preferably an encrypted -protocol, obtaining e.g. a Bluetooth standard radio link.

When both parts are assembled, they may have a bidirectional connection through a pair of appropriate connectors 19, joining automatically to each other.

The second part 16 may provide a connector 20 for recharging its internal batteries and also the internal batteries of the first part 11 through the connectors 19.

As shown in Fig. 4, the second part 16 (also called "power transceiving part") can be equipped with a further interfacing connector 21 to a personal computer 22, to allow a direct digital data exchange with the cellular network (such as to use the second part 16 for a "modem" function). The first part 11, or "control and audio part", may advantageously comprise an interface 23, such as an infrared one, in particular IrDA, for data exchange with the personal computer, i.e. the telematic services station.

Fig. 3 shows a preferred embodiment of the apparatus according to the present invention.

In this preferred embodiment, the power part 16 comprises the transceiver section 24 (GSM-DCS or other) mentioned above – which is no further described nor represented being a common one and easily conceivable by a man skilled in the art – and a connector 25 for a subscribersubscriber identifying module, such as SIM or UIM, to get access to the network. The part 16 may also comprise a buzzer 26, to be activated by the part 11 to facilitate its research should it get lost, and a vibration call indicator 27, which is useful to signal the subscriber about the arrival of a call when both parts are assembled forming one sole apparatus. In addition (or alternatively) also the part 11 can have its own vibration call indicator 28. This is useful whenever the power section, for

example, is located somewhere else (or placed in a case) and only the part 11 is kept in one's pocket.

Always with reference to Fig. 3, besides the already mentioned earphone 12, microphone 13, display 15 and keyboard 14, the part 11 may also comprise a connector for SmartCard 29, i.e. wherein a Smartcard can be housed for enabling access to telematic services, and a connector for Multimedia Card 30, i.e. a Flash data memory card or analogous.

Fig. 5 shows a communication system with telematic services supplied by telecommunication stations and/or networks, according to the present invention.

As it can be seen in this figure, several telephones according to the present invention (each one consisting of their respective parts 11,16) can carry on a dialog with the cellular network 31, to which also conventional cellular telephones can have access as well. In addition, the telephones according to the present invention may have their part 11 connected (as short distance) to a private station or network 32 through the interface 23 or other wireless communicating means. All units 11 or just the enabled units 11 may connect to this private station or network, e.g. through the SmartCard 29 or Multimedia Card 30.

For example, the station 32 may be installed in the house of the cellular telephone subscriber so as to have a private communication line between home and portable telephone, or be installed with companies wanting an internal communication system (with reserved access for company employees only) or a reserved communication system with customers, who can subscribe the service or obtain it as a "bonus". The latter utilization may be advantageous e.g. for banks.

From the above description the features of the present invention as well as the relevant advantages thereof are clear.

Through its separable control and audio part, the portable cellular telephone according to the present invention is advantageously apt to interact not only with the standard cellular network, but also with a further station or network through further wireless connecting means arranged on said control and audio part. Advantageously, the subscriber can utilize said control and audio part to have access also to other services differing from the cellular telephony network, such as company services, bank services or household network services. Moreover, availability of smartcards and multimedia

card connectors allow configuration of said control and audio part like a real true multiservice terminal.

The portable cellular telephone according to the present invention can be separated, whenever desired, in a power part to be placed at distance from the subscriber body,  
5 and a control and audio part with all subscriber interface functions usually available in a conventional cellular telephone, without any high power radio irradiations located near the subscriber's body.

The portable cellular telephone according to the present invention will advantageously use a radio transmission for connection between the two telephone parts, whose power  
10 is much lower than required for GSM transmission.

It is obvious that many changes are possible for the man skilled in the art to the portable cellular telephone and communication system with telematic services supplied by telecommunications stations and/or networks thereof described above by way of example, without departing from the novelty spirit of the innovative idea, and it is also  
15 clear that in practical actuation of the invention the components may often differ in form and size from the ones described and be replaced with technical equivalent elements.

For example, other functions and accessories may be provided, such as an FM radio, MP3 audio decoder functions, Voice Memo and Dialling, Wap Browser, etc.

The use of a standard radio link between the two parts will also allow connection of the  
20 control and audio module, other than connection with its own power part., to other equipment compatible with this standard. The power part 16 can also be used on its own as a GSM transceiving unit connected to a computer (advantageously a portable one) for practical data exchange through the network.